Kentucky Watershed Monitoring Activities

Monitoring Program/Activity	Responsible Party/Branch	Program Mission/Summary of Activities	Sampling Schedule and Locations	Product	Data Manager
Chemical/Physical Water Quality Parameter Studies					
Ambient Surface Water	Terry Anderson, DOW	The monitoring program is intended to provide information on ambient surface water quality in key KY watersheds and to provide data to support 305(b) and 303(d) reporting. The program consists of: - 45 fixed stations - physical and chemical parameters; fecal coliform during recreational season - biological and sediment monitoring at 12 stations - 6 to 8 lakes monitored during recreation season	- monthly monitoring at fixed stations - biological and sediment sampling once per year - lake monitoring April through October	Annual Report	
USGS Surface Water and Ground Water Stations	Amy Haliday, USGS Water Resources Division	USGS collects records of stage, discharge, and water quality for streams and lakes; and water levels of wells. Annual reports for 83 stream-gaging stations, also includes water-quality data for 33 stations samples at regular intervals (*see attached list of monitoring sites). GW levels for 13 recording and 70 partial sites.	See USGS monitoring network summary.	Kentucky Water Resources Data Water Year 1995	
Intensive Surveys	Mike Mills, DOW	45 least impacted sites across State are monitored for algae, macroinvertebrates and fish as well as physical and chemical parameters used for reference Biological and chemical surveys of watersheds to assess problems	Spring and Fall sampling One time sampling	Data Report Data Report	

Monitoring Program/Activity	Responsible Party/Branch	Program Mission/Summary of Activities	Sampling Schedule and Locations	Product	Data Manager
Chemical/Physical Water Quality Paramater Studies (Continued)					
Lake Studies during Stratification (April - September)	Pat Neichter, USACE Hydrology and Hydraulics Branch, Water Management Section	Monitor ambient water quality conditions at Corps projects and support project operations to meet authorized project purposes and Federal and State water quality standards. Data and samples are usually taken 4 times during the summer at inflow, outflow, and lake sites.	Fixed sample sites in: Barren River Lake, Green River Lake, Nolin River Lake, Rough River Lake, Buckhorn Lake*, Carr Fork Lake, Cave Run Lake**, Taylorsville Lake Field data recorded using instrumentation for pH, DO, and temperature. Water samples are taken for lab analysis of metals, chlorophyll a, N, and P. Algae and invertebrate samples are taken from inflow, outflow, and lake sites. Four sample events in 1995, except: *=1 sample event **=10 sample events	Annual report	Field and laboratory d are maintai Corps datal and eventu sent to STO
Lake Profiles (April - September)	Pat Neichter, USACE Hydrology and Hydraulics Branch, Water Management Section	Depth profiles of temperature and DO taken weekly at the dam during reservoir stratification. Data uses include the operation of selective withdrawal systems at projects to provide dam releases to meet downstream water quality criteria.	Weekly profiles from: Barren River Lake, Green River Lake, Nolin River Lake, Rough River Lake, Buckhorn Lake, Carr Fork Lake, Cave Run Lake, Taylorsville Lake Temperature and DO measurements are made from calibrated instrumentation.	Weekly Reports	Water and a temp., DO, water eleva dBase form Data plotter Clipper and

Monitoring Program/Activity	Responsible Party/Branch	Program Mission/Summary of Activities	Sampling Schedule and Locations	Product	Data Manage
Chemical/Physical Water Quality Paramater Studies (Continued)					
Priority Pollutant Screening Survey	Pat Neichter, USACE Hydrology and Hydraulics Branch, Water Management Section	Sediment elutriate samples are tested every 5 years for the presence of priority pollutants.(*see attached list of compounds)	Most recent surveys: Barren River Lake '95, Green River Lake '94, Nolin River Lake '96, Rough River Lake '96, Buckhorn Lake '94, Carr Fork Lake '96, Cave Run Lake '96, Taylorsville Lake '93	Annual Reports	Field and lab maintained in databases
Dredge Material Analysis	Pat Neichter, USACE Hydrology and Hydraulics Branch, Water Management Section	Analyze sediment samples to screen for contamination that may affect disposal of dredged material from the Ohio River adjacent to locks and mooring areas.	Lock and dam projects at: Marcland, McAlpine, Newburgh, Uniontown, Smithland	Sediment evaluation report	Field and lab maintained in databases
Remote Monitoring	Pat Neichter, USACE Hydrology and Hydraulics Branch, Water Management Section	Measurement of water quality variables on the lower Ohio River and specific reservoir sites with remote monitors and telemetry.	Telemetered sites-DO and temp: Ohio River - Cannelton L&D - Newburgh L&D - Smithland L&D - Uniontown L&D Barren River Lake - Inflow of Boyds Cr.Caesar Creek Lake - Inflow Cave Run Lake - Inflow, for chlorides	Monthly and Annual Reports	Data maintai Corps databa eventually se STORET
Contaminant Investigations	USFWS	Assessments include fish and wildlife tissue, egg, blood, water and sediment samples for reproductive hormones, organic and inorganic contaminants, and physicochemical parameters.	Periodic sampling in Tennessee R., Cumberland R., and Mississippi R. and adjacent counties	Reports to participating federal, state, and local entities.	GIS, ECDMS
Water Resource Investigations	USFS/Daniel Boone National Forest, Jon Walker, Hydrologist Vickie Bishop, Fisheries Biologist	Monitoring data are used to prepare Water Resource Inventory Reports on a watershed basis, develop forest plans, and write environmental assessments and biological evaluations. Principal parameters include inorganics and physical habitat.	Watersheds within Daniel Boone National Forest (see attached).	Water Resource Inventory Reports	Water data in ORACLE. P habitat data i dBase. Deve GIS layers.

Monitoring Program/Activity	Responsible Party/Branch	Program Mission/Summary of Activities	Sampling Schedule and Locations	Product	Dat Manage
Chemical/Physical Water Quality Paramater Studies (Continued)					
Ground Water Monitoring Network	DOW/Ground Water Branch/James Webb	Assessment of ambient ground water quality throughout the State; support wellhead and ground water protection plans and 319 studies.	70 sites representing each of KY's physiographic provinces sampled quarterly for 60 parameters including metals, pesticides, and nutrients. VOCs samples at select sites.	Year-end Report (attached) and raw data available from KGS or GWB.	Paper files data base Bill Yarnel Bart David KGS
Nonpoint Source Pollution (NPS)-319(h) Demonstration Projects and Contractual Projects	Corrine L. Wells, DOW/Water Quality Branch	Provide funding of efforts to mitigate deterioration of water quality due to nonpoint source pollution impacts in Kentucky watersheds and collect and disseminate water quality data documenting pre-and post-best management practice (BMP) implementation of multiple projects with various types of monitoring: - physical and chemical - fecal - biological - fish tissue	Sampling schedules and locations vary for each of numerous contractual and demonstration projects: - pre-BMP - post-BMP - recreational season - storm events	Demonstration Projects: - pre-BMP report - final close-out report Contractual Projects: - annual reports - final close-out reports	
Kentucky Groundwater Monitoring Network	Phil Conrad, KGS, Water Resources Section	State network that collects groundwater samples, amasses data from other organizations, and summarizes/characterizes groundwater resource to: (1) provide baseline data on ambient groundwater resources, (2) characterize ambient groundwater resources in publications, and (3) disseminate information collected and created by the network.	Variable schedule. Now selecting new sites for ground water sampling.	"Framework for the Kentucky Groundwater Monitoring Network" Working on summary document.	Data Repo KGS, Bart Davidson.

Monitoring Program/Activity	Responsible Party/Branch	Program Mission/Summary of Activities	Sampling Schedule and Locations	Product	Da Manag
Chemical/Physical Water Quality Paramater Studies (Continued)					
Hydrogeology of Agricultural Lands	James Currens, KGS, Water Resources Section	To determine the quality of groundwater in agricultural areas of Kentucky. Projects are developed as funding becomes available.	Ongoing; well installation and selection of monitoring sites is irregular as projects develop. Collected approximately 500 spring, stream, and well samples in FY 96. Sampling at each site varies from hourly to quarterly.	Reports and maps.	GW Data Repositor KGS.
Hydrogeology of Karst Terrains	James Currens, KGS, Water Resources Section	To develop an understanding of karst aquifers in the State for their promotion as a groundwater resource and to minimize economic loss from pollution, sinkhole flooding, or sinkhole collapse.	Varies with specific projects and issues. Collapse sinkhole and flooding investigations are conducted as the events occur. Dye tracing and aquifer characterization are conducted seasonally. Water quality monitoring ongoing.	Maps, reports, and data bases; publications.	KY GW D Repositor
Dye Tracing and Kentucky Dye Tracing Database	James Currens, KGS, Water Resources Section	Maintain a database and files of groundwater dye trace data for use in preparing maps and reports and for public access.	Ongoing, varies with receipt of new data.	Summary data tables	KY GW D Repositor
KWRRI Research Project	Barbara Ramey, EKU	Chemical and biological monitoring of a constructed wetland on Jones Branch acid mine drainage	Jones Branch	1995 Research Report No. 192	
KWRRI Research Project	Lyle V.A. Sendlein, KWRRI	Groundwater study at the Toyota Motor Manufacturing Plant in Georgetown, KY	Georgetown, KY	1995 Research Report No. 194	
KWRRI Research Project	Lindell Ormsbee, KWRRI	CSO impact assessment for the Licking River; CSO impact assessment for the Banklick Creek	Licking River Bancklick Creek	1995 Research Report Nos. UKCE9502, UKCE9501	

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Chemical/Physical Water Quality Paramater Studies (Continued)					
Compliance Monitoring	Neil Woomer, TVA Env. Compliance	Provides toxicity monitoring data for regulatory compliance reporting	Monthly at Paradise (Green R.) and quarterly at Shawnee (Ohio R.) power plants	Compliance Reports	
SDWA Compliance Monitoring	Vicki Ray, DOW/DWB	Determine compliance with the regulations for: - 526 community water systems - 114 transient PWS - 124 nontransient non-community PWS	Each PWS submits a list of sample sites for approval, samples are collected from these sites monthly, quarterly, annually and must be analyzed for specific contaminants by a certified laboratory and results submitted to DWB.	Violations of standards are generated during various compliance periods. Various letters and reports.	KYSDWIS SAS softw
Landfill monitoring	George Gilbert, Solid Waste Branch, DWM	The monitoring program is intended to provide information non both surface and groundwater quality and to ensure that the landfill is not contaminating the waters of the Commonwealth. The program consists of approximately: - 198 surface water monitoring points - 297 groundwater monitoring points - chemical parameters found in 401 KAR 48:300	Each location is sampled quarterly.	Quarterly monitoring report	
UST site investigation and assessment	Submitted by the facility owner's consultant to be reviewed by the Corrective Action Section of the UST Branch, DWM	Groundwater (and soil) samples are collected in order to determine the extent of contamination from UST (primarily petroleum constituents, i.e., BTEX, PAH's, lead, etc.). Ground water flow rate and direction also collected.	Sample coverage area is typically less than 400 sq meters (the size of a gas station lot) but the areas can easily be much greater. Data gathered up to 2 years and over variable sample areas.	Site Investigation Report	
UST Corrective Action plan formulation and implementation	Submitted by the facility owner's consultant to be reviewed by the Corrective Action Section of the UST Branch, DWM	Develop and implement a plan to remediate the contamination identified in the above process.	Most data collected during site investigation.	Corrective Action Plan	

Monitoring Program/Activity	Responsible Party/Branch	Program Mission/Summary of Activities	Sampling Schedule and Locations	Product	Dat Manage
Chemical/Physical Water Quality Paramater Studies (Continued)					
UST formal quarterly ground water monitoring	Submitted by the facility owner's consultant to be reviewed by the Corrective Action Section of the UST Branch, DWM	Groundwater samples collected from the affected area and analyzed for contaminants involved in site contamination.	Samples are collected quarterly from as many points as necessary over the affected areas. The number of sampling points is variable and site-specific.	Quarterly Monitoring Report	
Oversight Ground Water Monitoring	Dale Burton, Corrective Action Section, HWB, DWM	Facilities required to conduct long-term groundwater monitoring are evaluated every three years. At least 4 wells (1 up, 3 down) are monitored semi-annually at each site, although more monitoring sites may be required. Typical parameters include heavy metals, volatile organic compounds, and semi-volatile compounds.	Currently approximately 50 sites are undergoing monitoring.	Comprehensiv Groundwater Monitoring Evaluations	
Unscheduled Groundwater and Surface Water Monitoring	Dale Burton, DWM	Occasional samples are taken outside of regulatory requirements.	Sampling locations generally near hazardous waste management facilities.	Notices of Violation	
Superfund Site Assessment	Herb Petitjean, Superfund Branch, DWM	Superfund Branch conducts sampling to - establish the presence, levels and extent of contamination at potential abandoned or uncontrolled waste sites - establish the attribution of observed releases - insure the effectiveness of remediation activities - monitor those sites where waste is contained in-place	Frequency of sampling varies with sites. Statewide summary of media, frequency, and parameters samples is not readily available.	Individual site reports	Paper repo maintained DWM.GIS being developed data maint EPA.
Continuous Emissions Monitoring andIndustrial Air Monitors	DAQ, Technical Services Branch; Larry Garrison, DWM	Determine compliance with ambient air standards; assess air quality trends; and assess effectiveness of regulations and programs.	102 continuous monitors for criteria pollutants (except Pb and PM10); 35 air toxics monitors at 7 sites in tri-State area; 2 acid deposition monitors	KY Ambient Air Quality Annual Report	Data retrie from remo monitoring and stored mainframe EPA AIRS

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Chemical/Physical Water Quality Paramater Studies (Continued)					
Bimonthly Sampling	ORSANCO	- detection of long term trends; biennial assessment of aquatic life use support; ambient WQ conditions; problem identification - 31 fixed stations - physical/chemical water column monitoring	- bimonthly grab samples - 17 Ohio River sites and 14 major tribs. - location descriptors include lat-long, GIS, and river mile	- semiannual Quality Monitor publication - 305(b) Report - Trends Report	STORET
Organics Detection System	ORSANCO	- detection of VOCs/spills; biennial assessment of public water supply use support - 14 fixed stations-water column monitoring for 22 volatile organics	- daily or more frequent grab samples - 11 Ohio River sites and 3 tribs - locations descriptors include lat-long, GIS, and river mile	- semiannual Quality Monitor publication - 305(b) Report - Trends Report	STORET, data base Paradox
Contact Recreation	ORSANCO	- assessment of contact recreational use support; notification to health depts. on suitability of conditions for contact recreation; evaluation of urban impacts on bacteria levels - 6 fixed stations - fecal coliform, E. Coli	- 5 grab samples per month; May-October - sites are downstream of major urban areas - location descriptors include lat-long, GIS, and river mile	- 305(b) Report	in-house
Interrogation of Dissolved Oxygen Monitors	ORSANCO	- assessment of suitability for aquatic life; identification of need to modify hydropower operations - 13 fixed stations; owned and operated by USACOE and hydropower-operators - ORSANCO does not generate these data, but interrogates and reports results - DO and temperature	- hourly measurements - sites at 12 dams and one power plant - weekly interrogations of data from May-October	- monthly Quality Updates to States	- hard cop
Water Quality Instream Monitoring	MSD, Terhune/Nichol	provide baseline water quality data; document impact of package plant removal; assess point source impacts; adjust metals interference; evaluate nutrient processes; identify contamination of food chain	- routine sampling - physical parameters, chemical (nutrients, metals, etc.), and biological (macros, fish, bacteria)	MSD stream reports, State 305(b) Reports	lotus and

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Chemical/Physical Water Quality Paramater Studies (Continued)					
Emergency Response	MSD, Terhune	response to emergency spills/releases to/near streams which may impact aquatic community; protect environment, sewers, public	incident related sampling	enforcement and mitigation	IWIS
CSO Sampling	MSD/RGEV, Inc.	evaluate impacts to water quality due to overflow discharges	- samples collected for two rain events at 5-6 CSOs - TS, TVSS, BOD, TSS, settleable solids; instream sampling - fecals, pH, solids, metals, toxics, DO, sediment, nutrients, bioassessment - MSD will maintain some stormwater outfall sampling		Hard cop file
Biological/Habitat Assessments					
Rare Species Surveys	USFWS	Identify populations and habitat requirements	Variable sampling schedules	Management Plans, Recovery Plans	GIS GAP
Native/Baseline Mussel Surveys	USFWS	Mussel population monitoring	Annual Ohio River sampling; may conduct surveys in Green and Licking R. In FY 97.	Management Strategies,Rec Plans	GIS
Water Resource Investigations	USFS/Daniel Boone National ForestJon Walker, HydrologistVickie Bishop, Fisheries Biologist	Monitoring data are used to prepare Water Resource Inventory Reports on a watershed basis, develop forest plans, and write environmental assessments and biological evaluations. Principal parameters include inorganics and physical habitat.	Watersheds within Daniel Boone National Forest (see attached).	Water Resource Inventory Reports	

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Biological/Habitat Assessments (Continued)					
Inventory and Classification of Streams	KDFWS; Jim Axon	Inventory and classify streams of fishery importance and re-inventory certain streams; to assess current fish population and stream habitat conditions.	All major drainage basins completed since the 1960's except for some Ohio R. tributaries; Order II and larger sampled for fish species, composition, and physical/chemical characteristics.	Annual Performance Report	Paradox manages data; dev data layer
Warmwater Streams Investigation	KDWFS; Jim Axon	Determine the status of sport fisheries in warmwater streams or importance and develop fish management plan.	Short-term, finite studies direct at fish stock assessments.	Annual Performance Report	Paradox manages data; dev data layer
Nonpoint Source Pollution (NPS)-319(h) Demonstration Projects and Contractual Projects	Corrine L. Wells, DOW/Water Quality Branch	Provide funding of efforts to mitigate deterioration of water quality due to nonpoint source pollution impacts in Kentucky watersheds and collect and disseminate water quality data documenting pre-and post-best management practice (BMP) implementation of multiple projects with various types of monitoring: - physical and chemical - fecal - biological - fish tissue	Sampling schedules and locations vary for each of numerous contractual and demonstration projects: - pre-BMP - post-BMP - recreational season - storm events	Demonstration Projects: - pre-BMP report - final close-out report Contractual Projects: - annual reports - final close-out reports	
Intensive Surveys	Mike Mills, DOW	45 least impacted sites across State are monitored for algae, macroinvertebrates and fish as well as phys/chemical parameters used for reference Biological and chemical surveys of watersheds to assess problems	Spring and Fall sampling One time sampling	Data Report Data Report	
Zebra Mussel Monitoring	Benny Kerley, TVA Env. Compliance	Provide status of zebra mussel populations at intakes of TVA power plants.	Twice weekly at Paradise and Shawnee power plants (April - November)	Internal Report	

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Biological/Habitat Assessments (Continued)					
Reservoir Catch Depletion Surveys	Donny Lowery, TVA Clean Water Unit	Provides data and information on density, biomass, health and condition of black bass populations for use in fishery management decisions by State.	Annual spring sampling (pre-spawn) at 3 locations in Kentucky Reservoir	Annual Report	
Stream Bioassessments	Richard Starkey, TVA Clean Water Unit	Support river action teams to assess aquatic resource conditions of hydrologic units. Index of biotic integrity is used for fish communities, and rapid bioassessment protocols (EPT and nutrient tolerant) for macroinvertebrates.	23 locations in the TN River drainage for fish and benthic communities in spring-early summer on a 1-3 cycle.	Annual Report	
Vital Signs Monitoring	Don Dycus, Dennis Meinert, TVA Clean Water Unit	Provides information on the ecological health of TVA reservoirs and major tributary streams to rate the system for fishable, swimmable uses. Includes physical, chemical, and bacteriological sampling, fish tissue analysis, and fish and benthic community diversity assessment.	- 4 sites in Kentucky Reservoir (1 in KY at TRM 23) monthly during summer for DO, pH, nutrients, chlorophyll; annual in autumn for sediment (metals, pesticides); annual for diversity of fish and benthic communities; bacteria surveys at 19 sites during summer - Clarks R. Mile 9.8, quarterly physical, chemical; annual fish and benthic community	Annual Reports, e.g., RiverPulse	Data entr STORET
Endangered Species Monitoring Program	R. McCance, KY State Nature Preserves Commission	Identify the location of species considered rare in Kentucky by the KSNPC and USFWS and periodically verify their continued existence.	Statewide sampling focusing on individual watersheds. Rare plants counted to determine population status.		Biological Conserva Database KSNPC

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Biological/Habitat Assessments (Continued)					
Freshwater Mussel Monitoring Program	R.R. Cicerello, KSNPC	Monitoring program for freshwater mussels in the Green River within Mammoth Cave National Park.	Project completed in 1997. Quadrat sampling in 95 and 96 at miles 198.6 and 206. Species composition, length frequency, and reproductive success.	Interim Progress Report	BCD at K
Biological Monitoring	ORSANCO	- development of aquatic life assessment criteria; assessment of aquatic community health; characterization of habitat - currently 2 pools per year are being assessed - multiple sites and sampling events are conducted in each pool - fish population and macroinvertebrate surveys - habitat characterization	- currently fish population surveys are conducted at approximately 20 sites per pool; 500 meter zones - macroinvertebrate sampling conducted at approximately 10 sites per pool - 2 rounds or sampling per site - shoreline habitat recorded at each site	- development of biological criteria - riverwide habitat characterizatio Information System Database	- fish popu and macr invertebra stored in - habitat d spreadsh - Biologic Informatic System o electronic board
Fish Tissue	ORSANCO	- assessment of fish consumption use support for human health protection - facilitate states' issuance of fish consumption advisories	- approximately 12 Ohio River sites per year - channel catfish, carp, and game species sampled at each site - tissue analyzed for PCBs, pesticides and metals, and dioxin	- annual summary of results to states;teleconf of states to coordinate issuance of Ohio River fish consumption advisories	in-house
Hydrology/Hydraulic Process Studies					
Basin Hydrology	Dan Carey, KGS, Water Resources Section	Develop a data base on small watershed hydrology for a variety of setting in Kentucky. Use data to develop better models of surface and ground water movement and the associated movement of contaminants.	Four stream monitoring stations were installed in the Eastern Coal field. Nine stations were installed in the central Kentucky karst regions.	Continuous and storm flow data and water quality data.	Ongoing

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Hydrology/Hydraulic Process Studies (Continued)					
Water Supply	David Wunsch, KGS, Water Resources Section	Presently funded to study the occurrence of high-yield wells in coal field area using remote sensing and GIS technologies.	Presently selecting areas of study. Test wells will be installed in 96/97.	Reports with data and recommendatio for well locations.	KY GW D Repositor
Kentucky Groundwater Monitoring Network	Phil Conrad, KGS, Water Resources Section	State network that collects groundwater samples, amasses data from other organizations, and summarizes/characterizes groundwater resource to: (1) provide baseline data on ambient groundwater resources, (2) characterize ambient groundwater resources in publications, and (3) disseminate information collected and created by the network.	Variable schedule. Now selecting new sites for ground water sampling.	"Framework for the Kentucky Groundwater Monitoring Network"Worki on summary document.	Data Rep KGS, Bar Davidson
USGS Surface Water and Ground Water Stations	Amy Haliday, USGS Water Resources Division	USGS collects records of stage, discharge, and water quality for streams and lakes; and water levels of wells. Annual reports for 83 stream-gaging stations, also includes water-quality data for 33 stations samples at regular intervals (*see attached list of monitoring sites). GW levels for 13 recording and 70 partial sites.	See attached list of sites.	Kentucky Water Resources Data Water Year 1995	
Land Use/Soils/Other Studies					
Cooperative Soil Survey	Bill Craddock, USDA/NRCS	Soil survey is intended to provide information about the spatial distribution, physical properties, and use interpretations of soils in a survey area.	Ongoing. Refer to soil survey progress map.	Soil Survey Publication	Soils
National Resources Inventory (NRI)	Bill Craddock, USDA/NRCS	The NRI is intended to provide information about natural resource trends in the United States. The NRI is an inventory of land cover and use, soil erosion, prime farmland, wetlands, and other natural resource characteristics on nonfederal rural land in the United States. The NRI also provides a record or resource trends over time.	Nationwide. Conducted every 5 years.	NRI data base.	Land use

Kentucky Basin Assessment Tools

Assessment Activity	Responsible Party/Contact Person	Setting/Reason for Application
Fish and Wildlife Contaminant and Hormone Analysis	USFWS/Patuxent Analytical Control Facility, Laurel, MD	Fish and wildlife contaminant occurrence and population asses
303(d) Analyses	DOW	Surface water use assessment
KPDES Permit Limits	DOW	KPDES compliance assessment/instream activities
Surface Water Quality Standards	DOW	Use assessment
Maximum Contaminant Limits/Goals	Vicki Ray, DOW/DWB	Public health
Bacteriological Assessment	DOW	Recreation use assessment
Trophic Status Assessment	DOW	Aquatic life use assessment
Biological Indices (algae, fish, IBI, macroinvertebrates)	DOW	Comparison streams (least impacted)
FDA Action Levels or Risk Levels	DOW	Surface water use assessment
Reservoir Water Quality Modeling	Pat Neichter, Hydrology and Hydraulics Branch, USACOE	Water quality model (CEQUAL-W2) will be applied to Taylorsvi The model will be used to evaluate proposed changes in land u practices in the watershed relative to water quality in the reserv
Tools for Groundwater/Surface Water Interaction	Jim Dinger, KGS/Water Resources Section	Determine interaction between surface water and groundwater of groundwater, groundwater discharge and recharge zones, w GW on SW quality and quantity.
Tools for assessing water quality for drinking and other uses	KGS	EPA MCLs, secondary quality standards, water-quality needs f agriculture, livestock, industry, water-chemistry models, water- statistics.
Tools for karst groundwater basin delineation	James Currens, KGS/WRS	Ground water dye tracing (qualitative and quantitative), spring measurement, potentiometric surface mapping (synoptic water continuous monitoring capability, cave maps.
Tools for water-chemistry/quality modeling over time and flow systems	David Wunsch, KGS/WRS	Model applications including PHREEQE, MINTEQ, BALANCE, water quality and chemistry evolution over time and changes w

Assessment Activity	Responsible Party/Contact Person	Setting/Reason for Application
Tools for assessing the quality of groundwater resources	Phil Conrad, Jim Currens, KGS/WRS	Sampling, field measurements of private wells, springs, monitc streams; analyses for nutrients, pesticides, inorganics and orga assess current and changing ground water quality.
Tools for hydrologic modeling for surface water quantity and quality	Dan Carey, Alex Fogle, KGS/WRS	Computer modeling using ANSWERS, AGNPS, SWRBBWQ, a
Fish tissue	Don Dycus, TVA Clean Water Initiative (CWI)	Reservoir ecological health assessments
Bacteriological assessments	Joe Fehring, TVA CWI	Reservoir swimming areas assessments
Trophic status assessments	Dennis Meinert, TVA CWI	Reservoir ecological health assessments
Fish populations	Donny Lowery, TVA CWI	Reservoir stock depletion surveys
Stream bioassessments	Bob Wallus, TVA CWI	Hydrologic unit (streams) fish and benthic assessments
Zebra mussel assessments	Benny Kerley, TVA CWI	Water intake (reservoirs) populations